

EST



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,052	05/31/2001	Robert S. Matson	1810A-045 (81841.0192)	8141
46267	7590	09/12/2005	EXAMINER	
HOGAN & HARTSON LLP 500 S GRAND AVE SUITE 1900 LOS ANGELES, CA 90071			LAM, ANN Y	
			ART UNIT	PAPER NUMBER
			1641	

DATE MAILED: 09/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

He

Office Action Summary

Application No.

09/872,052

Applicant(s)

MATSON ET AL.

Examiner

Ann Y. Lam

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2005 and 23 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 55-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55-71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 55-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admission on page 7 (first two full paragraphs) of Applicants' response of May 23, 2005, in view of Swayze et al., 6,316,626.

Page 7 of Applicants' response states that:

"Prior to the present invention, it was generally understood in the art that the attachment of biopolymers via available terminal amino groups may lead to inefficient and unstable attachment or to reduced activity of the attached biomolecule. Since biopolymers contact supports in a random orientation, the terminal attachment of biopolymers may suffer from low stability and efficiency.

Because of the possible low attachment efficiency and reduction in biomolecule activity of terminal attachments via naturally present amino groups, this methodology has been abandoned years ago in favor of using post-modified or derivatized biomolecules."

Thus, Applicants' have admitted that the invention of attaching unmodified biopolymers to a solid support was known or used by others in this country before the invention thereof by Applicants.

Art Unit: 1641

However, Applicant's admission does not mention the use of acyl fluoride to attach the biopolymer to the solid support. Swayze et al. however teaches the use of acyl fluoride to functionalize a solid support to further attach molecules.

Swayze et al. teaches that acyl fluorides are useful coupling agents for coupling biopolymers to a solid support (col. 2, lines 60-63, and col. 108, lines 31-53.) It would have been obvious to one of ordinary skill in the art to attach unmodified biopolymers to a solid support, as is well known or used in the public as admitted by Applicants, by means of derivatized acyl fluoride, as taught by Swayze et al. because Swayze et al. teaches that acyl fluorides provide the advantage of coupling biopolymers to a solid support.

As to the following claims, Swayze et al. discloses the limitations as follows.

As to claim 56, the biopolymers are nucleic acids (col. 2, line 63.)

As to claims 57 and 58, the biopolymers are polynucleotides (col. 2, line 63.)

As to claim 59, the polynucleotide is single or double stranded DNA (col. 2, line 63.)

As to claims 60 and 71, the biopolymers may be the same or different.

As to claim 61, the solid support is of polymeric materials (col. 35, lines 41-42.)

As to claim 62, the solid support is carboxylated PVDF, carboxylated polypropylene or carboxylated polyethylene, (col. 35, lines 43-44, and col. 36, lines 6-8.)

As to claim 63, the solid support is in the form of plates (i.e., well plates, col. 133, lines 57-61.)

As to claim 64, the solid support is fabricated from plastic in the form of a planar device having discrete isolated areas in the form of wells (col. 35, lines 41-42, and col. 133, lines 57-61.)

As to claim 65, the solid support is a microplate (col. 133, lines 57-61.)

As to claim 67, the plastic is polystyrene or polyethylene (col. 42-43.)

As to claims 68-70, the biopolymers are attached to different, discrete, isolated areas to form an array (col. 49, lines 54-58.)

2. Claims 55-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barany et al., 6,852,487, in view of Swayze et al., 6,316,626.

Barany et al. discloses the invention substantially as claimed. More specifically, as to claim 55, Barany et al. discloses a plurality of biopolymer and a solid support (col. 23, line 21), wherein the solid support has at least one surface comprising pendant acyl halide functionalities (col. 23, line 23), and wherein an unmodified end of the biopolymer is attached to the solid support by reaction with the pendant acyl halide functionalities in the absence of a spacer arm, (col. 26, lines 36-39, and col. 23, lines 20-23, disclosing the attachment of pre-synthesized probes, and col. 32, lines 25-28, disclosing spotting of oligomers to a solid support.)

As to claim 56, the biopolymers are nucleic acids (col. 26, line 37.)

As to claims 57 and 58, the biopolymers are polynucleotides (col. 26, line 37.)

Art Unit: 1641

As to claim 59, the polynucleotide is single or double stranded DNA (col. 26, line 37.)

As to claims 60 and 71, the biopolymers may be the same or different.

As to claim 61, the solid support is of polymeric materials (col. 22, line 33.)

As to claim 62, the solid support is carboxylated PVDF, carboxylated polypropylene or carboxylated polyethylene, (col. 22, lines 14-16 and lines 51-52.)

As to claim 63, the solid support is in the form of films (col. 22, line 1.)

As to claim 64, the solid support is fabricated from plastic in the form of a planar device having discrete isolated areas in the form of wells (col. 22, lines 1-7.)

As to claim 65, the solid support is considered a microplate (col. 22, lines 6-7.)

As to claim 67, the plastic is polypropylene (col. 22, line 16.)

As to claims 68-70, the biopolymers are attached to different, discrete, isolated areas to form an array (col. 9, lines 42-44.)

Although Barany et al. teaches that the surface of the solid substrate is functionalized with binding members, such as acyl halide (col. 22, lines 36-40), Barany et al. does not specifically disclose that the halide is fluoride (as claimed in claim 55 and 66.) Swayze et al. however teaches this limitation.

Swayze et al. teaches that acyl halides such as acyl fluorides are useful coupling agents for coupling biopolymers to a solid support (col. 2, lines 60-63, and col. 108, lines 31-53.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize acyl fluoride in the Barany et al. method, as taught by Swayze et al., as the acyl halide generally disclosed by Barany et al., because Swayze

Art Unit: 1641

teaches that acyl fluoride provides the advantage of functionalizing a solid substrate such as the Barany et al. polymer solid substrate, in order to immobilize biomolecules.

Response to Arguments

Applicant's arguments with respect to the rejections have been fully considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on M-Sat 11-6:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/872,052
Art Unit: 1641

Page 7

A.L.

A handwritten signature in black ink, appearing to be 'AL' or similar, written in a cursive style.A handwritten signature in black ink, appearing to be 'Long V. Le', written in a cursive style.

LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600
09/06/01